THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering

October 17, 1996

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Richard Spiese, Site Coordinator
Sites Management Section
State of Vermont Waste Management Division
103 South Main Street
Waterbury, Vermont 05671-0404

Re: Report on Soil Investigation at 194-208 Columbian Avenue, Rutland VT.
DEC Site #92-1273.

Dear Richard:

Enclosed is the report that describes our findings from an investigation performed October 1, 1996 at 194-208 Columbian Avenue apartments.

Should you have any questions or comments, please contact me at 229-4600 or Chris Kilburn, Precision Industrial Maintenance at (802) 747-4444. Thank you.

Sincerely,

THE JOHNSON COMPANY, INC.

By: Jim Bowes

James R. Bowes
Senior Scientist
e-mail: jbowes@jcomail.com

cc: Chris Kilburn, Precision

Reviewed By: j_b
J:\PROJECTS\1-1663-1\SPIESE2.LTR October 17, 1996 jrb

Report

October 1996

Soils Investigation at 198-204 Colombian Avenue Rutland VT

Prepared for:

PRECISION INDUSTRIAL MAINTENANCE
P.O. Box 1791
Rutland, VT 05701

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering

100 State Street, Suite 600
Montpelier, Vermont 05602
802.229.4600/Fax 5876

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EXECUTIVE SUMMARY

The Johnson Company has completed a Preliminary Soil Investigation on property located in Rutland VT at 194-208 Columbian Avenue (Department of Environmental Conservation Site #94-1273). This investigation was centered on confirming and, further delineating reported soils contamination behind three (3) apartment buildings on four lots at 194-208 Columbian Avenue, Rutland, Vermont. This work was performed at the request of Precision Industrial Maintenance of Rutland VT. Precision Industrial Maintenance has been retained as the environmental consultant to the Potentially Responsible Parties (PRPs) who have been the recipients of an Assurance of Discontinuance (AOD) dated August 22, 1996, requiring them to perform action(s) to mitigate reported soil contamination behind the apartment buildings. The AOD was generated by the Department of Environmental Conservation (DEC) Sites Management Section. This report documents the findings of one of the requested actions listed on the AOD, a Soil Investigation that was conducted October 1, 1996. The Johnson Company and Precision Industrial Maintenance collected a total of 30 soil samples for description, and field screening, and from these, 14 were submitted to Green Mountain Laboratories (Montpelier, VT) for analyses for presence of polychlorinated bi-phenyls (PCBs) and the RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). A previous investigation conducted in July 1994 by Leggette, Brashears, and Graham (Nashua, NH) working on behalf of the DEC reported the presence of PCBs, lead and arsenic at levels determined by the Vermont Department of Health to require clean up. The July 1994 soil investigation delineated three locations where PCBs were reported in soils. Although information made available to The Johnson Company did not provide specific depth increments for each sample collected, it is presumed that LBG sample intervals went no deeper than the uppermost two-feet (1.7 feet). The 1996 soils data was collected to test the soils both in the uppermost two-foot interval, and lower (down to six feet bgl in specific locations). Of the seven samples submitted for analyses, PCB detections were reported in two areas: in a composite sample collected due east of the driveway behind #194; and, in a discrete sample collected due south of the driveway behind #194. Although the reported detections were lower than the 1994 data, the presence of soil PCBs in the area behind 194-198 was confirmed. Environmental Protection Agency (EPA) Region III has developed Risc Based Concentrations for compounds in residential soils. The listed RBC for the general category of PCBs in residential soils is 0.083 ppm, and for Aroclor 1254; 1.6 ppm. The highest reported PCB concentrations (Aroclor 1248 and Aroclor 1254) were reported at a range from <0.2 - 0.10 milligrams/Kilogram (ppm) respectively behind 194-198 Columbian Ave. PCBs were not detected above the respective limit of detection for the analyses in any of the other zones sampled. With respect to metal data, we compared the October 1, 1996 concentrations to previously reported lead concentrations from similar areas. July 1994 sampling by LBG reported a range in soil lead concentrations from 334-486 ppm from the same areas that the 1996 data reported soil lead at 443-973 ppm respectively (JCO samples 202-1; 202-2). The RBC for lead listed in EPA's Guidance document (as tetraethyl lead) is 0.008 ppm. The State of Vermont currently does not list soil guidelines for compounds. However, the Commonwealth of Massachusetts lists the limit for soil lead in a residential setting at 300 ppm. Based upon the findings of this soil investigation, The Johnson Company recommends a limited soil corrective action program, whereby soils are excavated from the uppermost two-foot interval, and trucked offsite for disposal at the nearest lined landfill (reportedly a facility in Bethlehem, NH according to the Rutland Solid Waste District).

1.0 INTRODUCTION

The Johnson Company Inc., Montpelier VT (JCO) has completed a preliminary soils investigation on three apartment buildings located at 194 - 208 Columbian Avenue, Rutland, VT (Columbian Avenue Apartments, Sites Management Section Site #92-1273). The site location is delineated on Figure 1. This work was performed at the request of Mr. Chris Kilburn, Precision Industrial Maintenance, Rutland VT. This work was carried out under a Professional Services Agreement between JCO and Precision Industrial Maintenance (PIM) and was done pursuant to the schedule described in an Assurance of Discontinuance dated August 22, 1996 from the Vermont Department of Environmental Conservation (DEC) to the potentially responsible parties (PRPs).

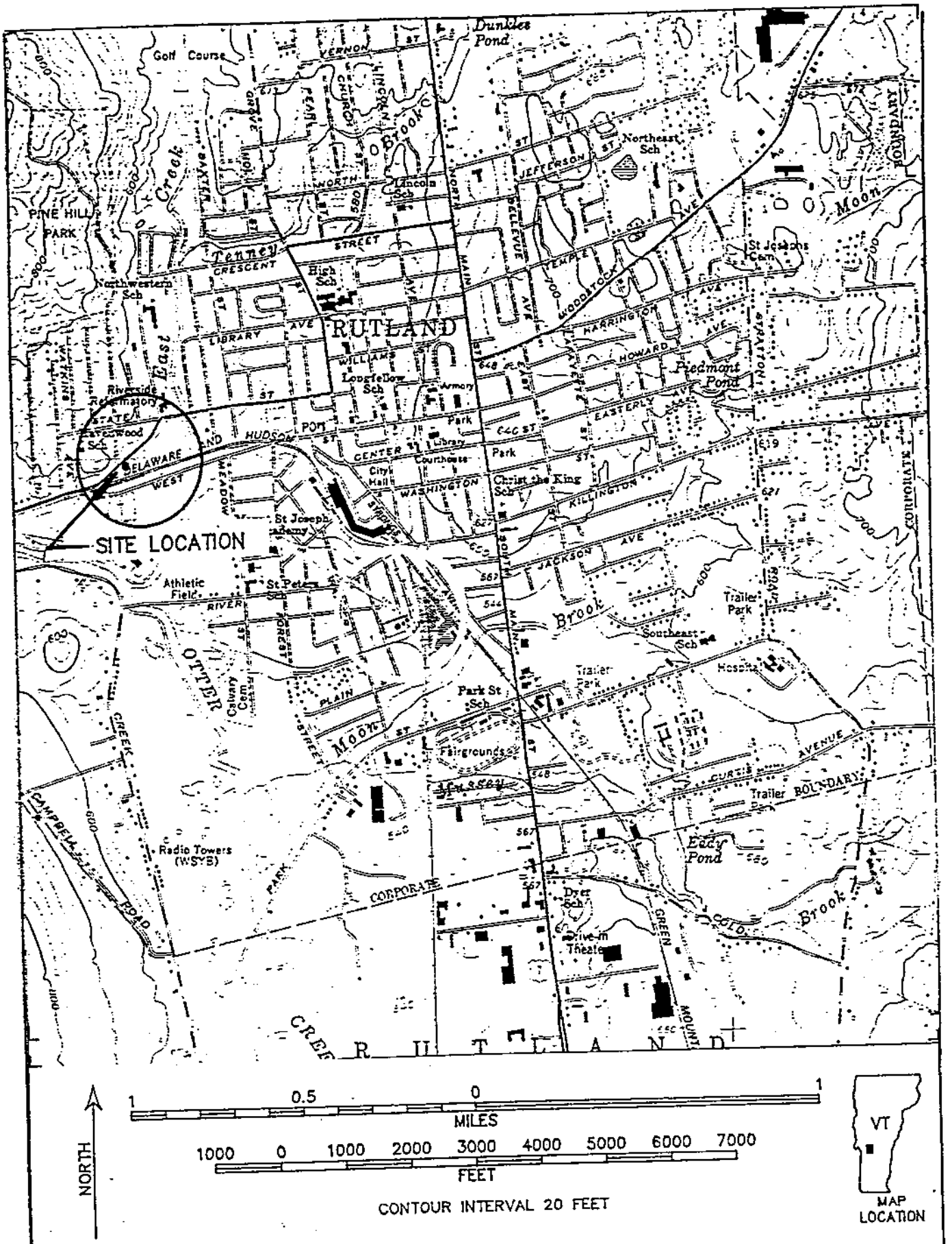
2.0 BACKGROUND

The Assurance of Discontinuance (AOD) was generated due to the DEC's concerns regarding soils behind the Apartments (south) reportedly contaminated with polychlorinated bi-phenols (PCB); lead; arsenic; and polynuclear aromatic hydrocarbons (PAHs).

This reported contamination was discovered during an environmental site assessment performed by Dennsion Environmental Services of Richmond, VT. Dennsion was working for Vermont Housing which was considering purchase of the properties (DEC, 1996). The report was received by the DEC in August of 1992. The DEC requested that the PRPs to perform follow-up work related to the discovery of the reported contamination. The PRPs declined, and the DEC ordered their consultant, Leggette Brashears and Graham (LBG) of Nashua, NH to undertake an additional investigation. The investigation was performed by LBG in July 1994.

In February 1995 the DEC received LBG's report that indicated elevated levels of PCBs behind 194-198 Columbian Avenue (Figure 2); PAHs and stressed vegetation behind 200, and 204-208 Lot; and, lead at elevated levels behind all Apartments except 202 (DEC, 1996).

As previously mentioned, JCO was contacted by PIM to perform services related to generating a Corrective Action Plan (CAP) for remediating the indicated soil contamination. JCO recommended that additional sample collection would be required to confirm the previously reported compounds prior to our being able to generate a CAP that meets the DEC Guidelines. JCO recommended the soils work that has been undertaken in this study unbeknownst that the DEC had also recommended this work. The results of this investigation follows.



BASE MAP : USGS 7.5 Minute Topographic Quadrangle: Rutland, VT (1961), photorevised 1980.

FIGURE 1: Site Location Map
194-208 Columbian Avenue
Rutland, Vermont

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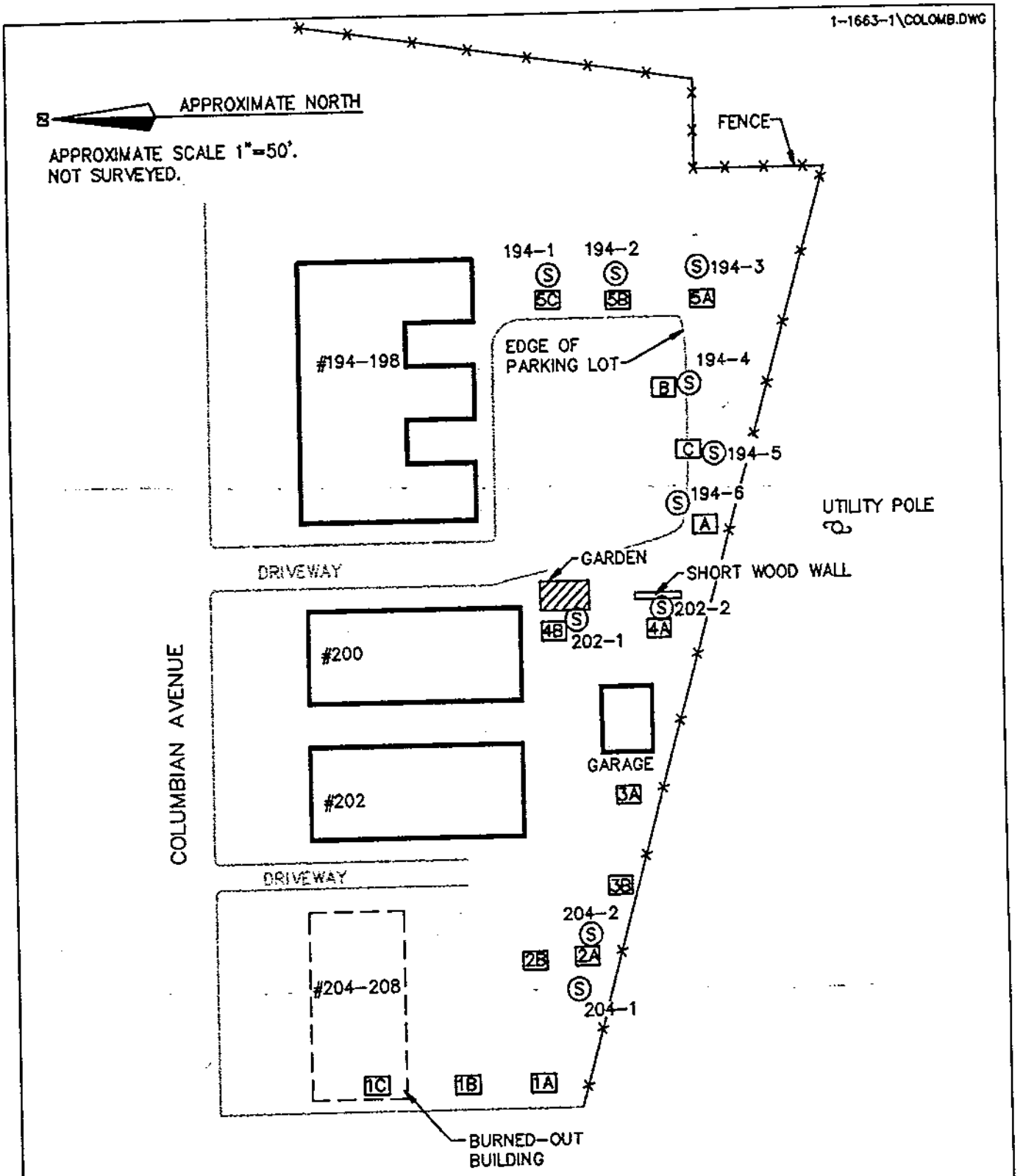

FIGURE 2 – SITE SKETCH
194–208 COLUMBIAN AVE.
RUTLAND, VERMONT

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3.0 METHODOLOGY

Prior to embarking on this investigation, JCO generated and submitted to the DEC an investigation work plan for DEC review and approval. The DEC approved of the work scope on September 27, and on October 1, 1996, Paul Daly (JCO) and Chris Kilburn (PIM) performed the site work. The weather conditions were sunny, with air temperature in the 60's Fahrenheit.

The targeted sample locations were chosen to correspond with the locations described in the LBG report dated February 1995. Areas where stressed vegetation or stained soils were evident were specifically targeted at Apartments 194-198 and 204-208 Columbian Avenue, as were locations adjacent to the garden at #200 Columbian Avenue. This sampling event had the following objectives:

1. To confirm the level of contamination reported by LBG.
2. To explore the nature of the soils below the depths which had only been previously sampled to 1.7 feet below ground level.

A Thermal Instruments OVM Model 580B Photo Ionizing Detector (PID) was calibrated using zero air and isobutylene span gas prior to initiating the intrusive work. The PID was used as both a field screening mechanism, and for health and safety monitoring. No ambient readings greater than 1 part per million (ppm) in the breathing zone were registered on the PID throughout the day.

3.1 SOIL CORE INSTALLATION

The soil sampling commenced behind the 194-198 Apartments (Figure 2) by first decontaminating the sampling equipment, and setting up separate sample inspection/ receiving areas and a separate work platform used to collect soil cores.

The soil cores were driven using a Hitachi electric jackhammer equipped to drive a two-inch inside diameter (i.d.) basket-equipped split spoon sampler. Lengths of AW drill rod were added to the drill string to achieve the desired depths.

3.2 SOIL SAMPLE COLLECTION

A total of 10 soil borings were advanced through course of this investigation. Locations are shown on the site sketch map in Figure 2. Unless refused at shallow depths, each boring consisted of three discrete two-foot long split spoon recoveries.

Approximately 30 separate split spoon samples were collected. Each split spoon recovery was opened and immediately field screened for presence of volatile organic compounds (VOC.) using the PID. The amount of recovery, the nature and composition of the material recovered, and the general stratigraphic interval were recorded. Individual split spoon recoveries were immediately contained within sealed plastic bags, labeled and agitated. Approximately 5 minutes later, a headspace reading was taken from the bag using the PID and noted.

Of the total, 12 samples were collected for laboratory analyses. Samples to be collected for analyses were selected by one or more of the following criteria:
those samples from the previously reported areas of concern (for confirmation); samples that best delineated the vertical extent of contamination; and/or, samples within areas of stained soils.

Each boring (and associated analytical sample, if applicable) was identified by a numerical system that delineated the apartment building address, the soil boring number, and the depth of the sample; e.g. 194-1-2 indicates the first boring taken at #194 Columbian Ave, at 2 feet below ground level (bgl). The sample delivery group consisted of eight discrete interval samples, and four composites. The composites were labeled by the Apartment #, the boring number, and the depth increment sampled. For example "194-123-4-6", indicates a composite sample consisting of soil borings numbered 1, 2 and 3 collected behind Apartment 194, and all from the 4 to 6 foot depths.

All soils, once transferred to jars and labeled, were stored chilled in an ice chest for transport back to JCO offices. The samples were stored overnight under chain of custody in JCO's analytical refrigerator for subsequent delivery to Green Mountain Laboratory in Montpelier, VT. Samples were specified for analyses for PCBs and the RCRA 8 metals at Green Mtn Lab (GML). GML logged in the sample group on October 2, 1996.

Although the work plan approved by the DEC called out analyses for PAHs, the decision was made to not test for PAHs. This was due to the observation by the Field Crew that of all thirty samples investigated, only one registered a PID field screen reading above background (4.5 ppm in #202-1-2-4). Since this location had been targeted for soil removal anyway (i.e. the Vermont Health Department in their document dated April 5, 1995 recommended soil cleanup here due to reported "arsenic levels slightly above background" next to the garden) the decision was made in the field to not sample for the PAHs since this area was to be remediated anyway.

4.0 RESULTS

4.1 SOIL STRATIGRAPHY

The soil units investigated behind 194-208 Columbian Avenue as characterized from the 10 locations tested, is composed of man-made fill, with distinct localized layer(s) of coal-ash up to two feet thick observed in one of the soil borings (194-3). The coal ash forms a discontinuous unit that was observed in each soil boring at varying depths, but predominately in the borings behind #194-198 apartment.

Soils encountered at 194-198 is composed entirely of man-made fill, generally consisting of dark brown or stained sands underlain by a discontinuous layer of mixed coal ash and fine tan dry sand. The ash and fine tan sand layer(s) were noted to extend from a few inches below the surface to four feet bgl. Coarser orange sand interspaced with fill and rubble consisting of brick, metal and glass underlie the ash layer from 4 to 6 feet, and give way to a coarse sand at 6 feet. No PID readings above background levels were registered at this location.

At #200 Columbian Avenue the soil interval was composed of approximately the same soils as observed behind #194-198. At sample location 202-1, a single positive PID value of 4.5 ppm was registered in the soil interval recovered from 2 - 4 feet bgl, and consisting of fine beach sand and silt overlain by coarse sandy fill and ash.

At #204-208 Columbian Avenue, similar soil horizons were observed, but additional discontinuous layers of coarser fill including pebbles and small stones were observed, with lesser amounts of the coal ash. Refusal on white marble of unknown size (but impenetrable)was encountered at 3 feet bgl at 204-2. No positive PID readings (above background concentrations) were observed.

4.2 SOIL ANALYTICAL RESULTS

Table 1 summarizes the location and identification of the samples submitted to Green Mountains Laboratory (GML) for analyses. Figure 2 shows the locations of the soil borings from which samples were collected for laboratory analyses.

Table 1
194-208 Columbian Avenue, Rutland, VT
List of Soil Samples
October 1, 1996

Identification	Apartment#	Soil Boring #(s)	Sample Interval Depth (feet)	Analytes
194-123-0-2	194	1,2,3 (Composite)	0-2	PCB; RCRA 8
194-123-4-6	194	1,2,3 (Composite)	4-6	PCB; RCRA 8
194-4-0-2	194	4	0-2	PCB
194-4-4-6	194	4	4-6	PCB
194-5-0-2	194	5	0-2	PCB
194-5-4-6	194	5	4-6	PCB
194-6-0-2	194	6	0-2	PCB
202-1-0-2	202	1	0-2	RCRA 8
202-1-4-6	202	1	2-4(1)	RCRA 8
202-2-0-2	202	2	0-2	RCRA 8
204-12-0-2	204	1,2(composite)	0-2	RCRA 8
204-12-2-6	204	1,2(composite)	2-6	RCRA 8
(1)The identification of this sample was incorrectly listed on the Chain of Custody as 4-6'				

Green Mountain Laboratory analyzed the soil group for the RCRA 8 metals using digestion by EPA Method 3020, and Atomic Absorption (AA) except mercury, which was analyzed by cold vapor extraction. The soils were analyzed for PCBs by EPA Method 8270. The work plan called out using method 8080, however, because of the field decision to not sample for PAHs, the Project Manager made the decision to run the PCBs by 8270, in the event there was the need to re-test for the PAHs. A copy of GML's report is included with this document as Attachment 1.

4.2.1 *Soil PCB Results*

Of the seven PCBs tested for (Aroclor 1016, 1221, 1232, 1242, 1248, 1254, and 1260) two (Aroclor 1248 and 1254) were detected at or above the limits of analytical detection. Table 2 summarizes the PCB concentrations from soils behind the Columbian Avenue apartments that were reported at concentrations greater than the published EPA Region III Risk-Based Concentrations (RBC) for residential soils (1995). The October 1, 1996 data are listed with the July 1994 reported concentrations for the same locations so a means of comparison between the two sets of data can be made.

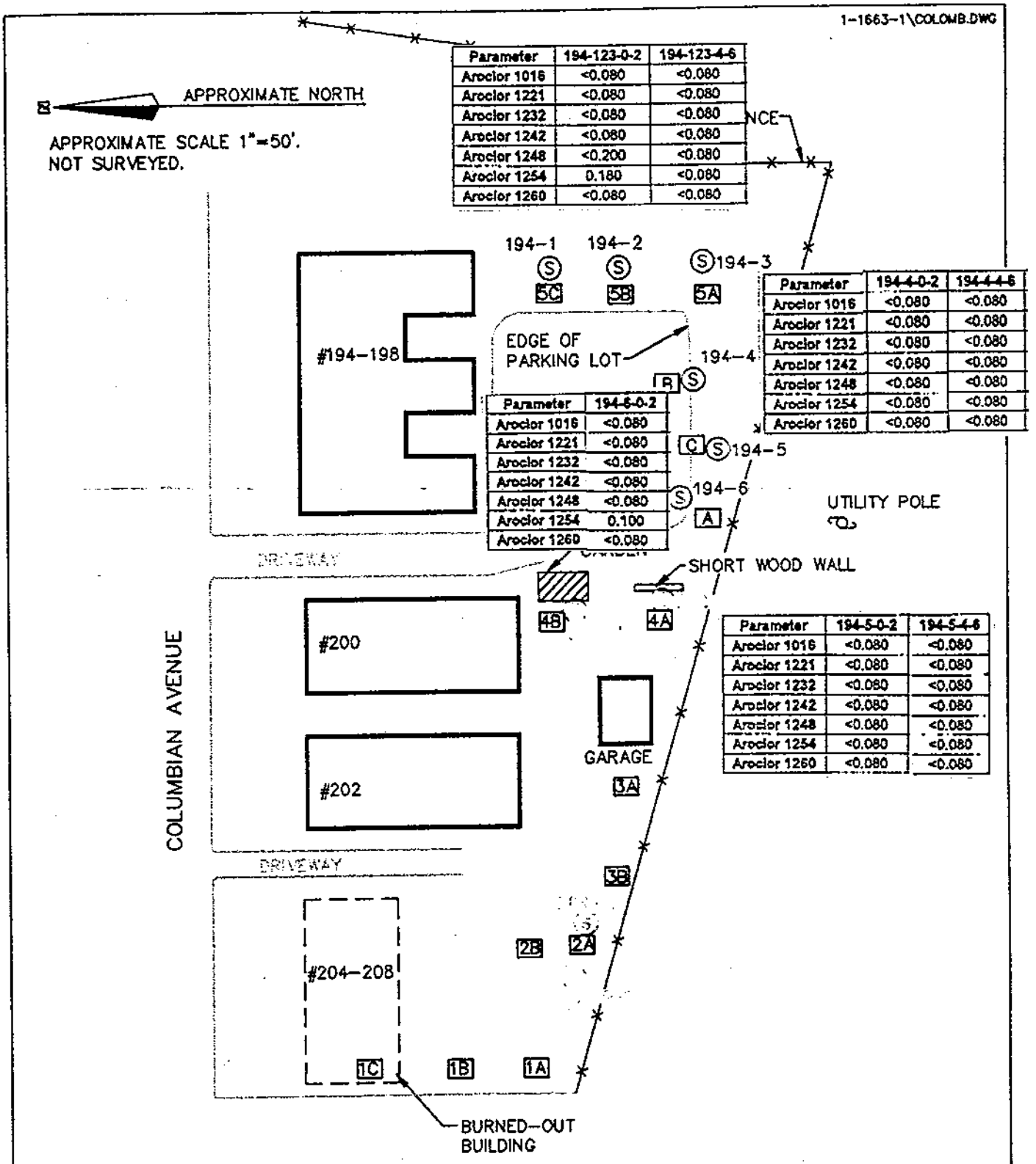
Table 2
Summary of Detected PCB's in Soils
194-208 Columbian Avenue
Rutland VT
Concentrations in Milligrams/Kilogram
Parts per Million Dry Wt.

October 1996 Result				July 1994 Result			
JCO SAMPLE ID	INTERVAL (FT)	PARAMETER		LBG SAMPLE ID	INTERVAL	PARAMETER	RBC
		Arochlor 1248	Arochlor 1254			"PCB"	
194-123-0-2	0-2 Composite	<0.20	0.18	"5A"	Composite	0.10	0.083
194-6-0-2	0-2 Discrete	<0.08	0.10	"A"	N.A.	2.30	

1. Analytical data from Green Mtn Laboratory, Montpelier VT. Report # Dated 10/10/96.
2. JCO= The Johnson Company
3. LBG = Leggette, Brashears, and Graham
4. N.A. = Not Addressed. Information not available.
5. RBC = Risc-Based Corrective Action EPA Region III for PCB in Residential Soils

Both Aroclor 1248 and Aroclor 1254 were reported in a composite sample (0-2 feet bgs at 194-1,2, 3). Aroclor 1254 was reported in a discrete sample (0-2 feet bgs from 194-6). Figure 3 shows the locations of the JCO 1996 samples with respect to the sample locations from the July 1994 investigation.

The July 1994 soil investigation delineated three locations where PCBs were reported in soils (locations A, B, C on Figure 3). The presence of soil PCBs in the area behind 194-198 was confirmed with the 1996 soil testings, however, PCBs were not detected above the respective limit of detection in the deeper soils sampled in these areas.



Parameter	194-123-0-2	194-123-4-6
Aroclor 1016	<0.080	<0.080
Aroclor 1221	<0.080	<0.080
Aroclor 1232	<0.080	<0.080
Aroclor 1242	<0.080	<0.080
Aroclor 1248	<0.200	<0.080
Aroclor 1254	0.180	<0.080
Aroclor 1260	<0.080	<0.080

Parameter	194-4-0-2	194-4-4-6
Aroclor 1016	<0.080	<0.080
Aroclor 1221	<0.080	<0.080
Aroclor 1232	<0.080	<0.080
Aroclor 1242	<0.080	<0.080
Aroclor 1248	<0.080	<0.080
Aroclor 1254	<0.080	<0.080
Aroclor 1260	<0.080	<0.080

Parameter	194-6-0-2
Aroclor 1016	<0.080
Aroclor 1221	<0.080
Aroclor 1232	<0.080
Aroclor 1242	<0.080
Aroclor 1248	<0.080
Aroclor 1254	0.100
Aroclor 1260	<0.080

Parameter	194-5-0-2	194-5-4-6
Aroclor 1016	<0.080	<0.080
Aroclor 1221	<0.080	<0.080
Aroclor 1232	<0.080	<0.080
Aroclor 1242	<0.080	<0.080
Aroclor 1248	<0.080	<0.080
Aroclor 1254	<0.080	<0.080
Aroclor 1260	<0.080	<0.080

Polychlorinated Biphenyls (PCBs) by EPA Method 8270 (GC/MS)
Results - mg/kg - ppm (Dry Weight)

LEGEND

(S) JOHNSON COMPANY SOIL SAMPLE LOCATION

1A PREVIOUS CONSULTANT SOIL SAMPLE LOCATION

FIGURE 3
OCTOBER 1, 1996 PCB SOIL RESULTS
194-208 COLUMBIAN AVE.
RUTLAND, VERMONT

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4.2.2 *Soil Metals Results*

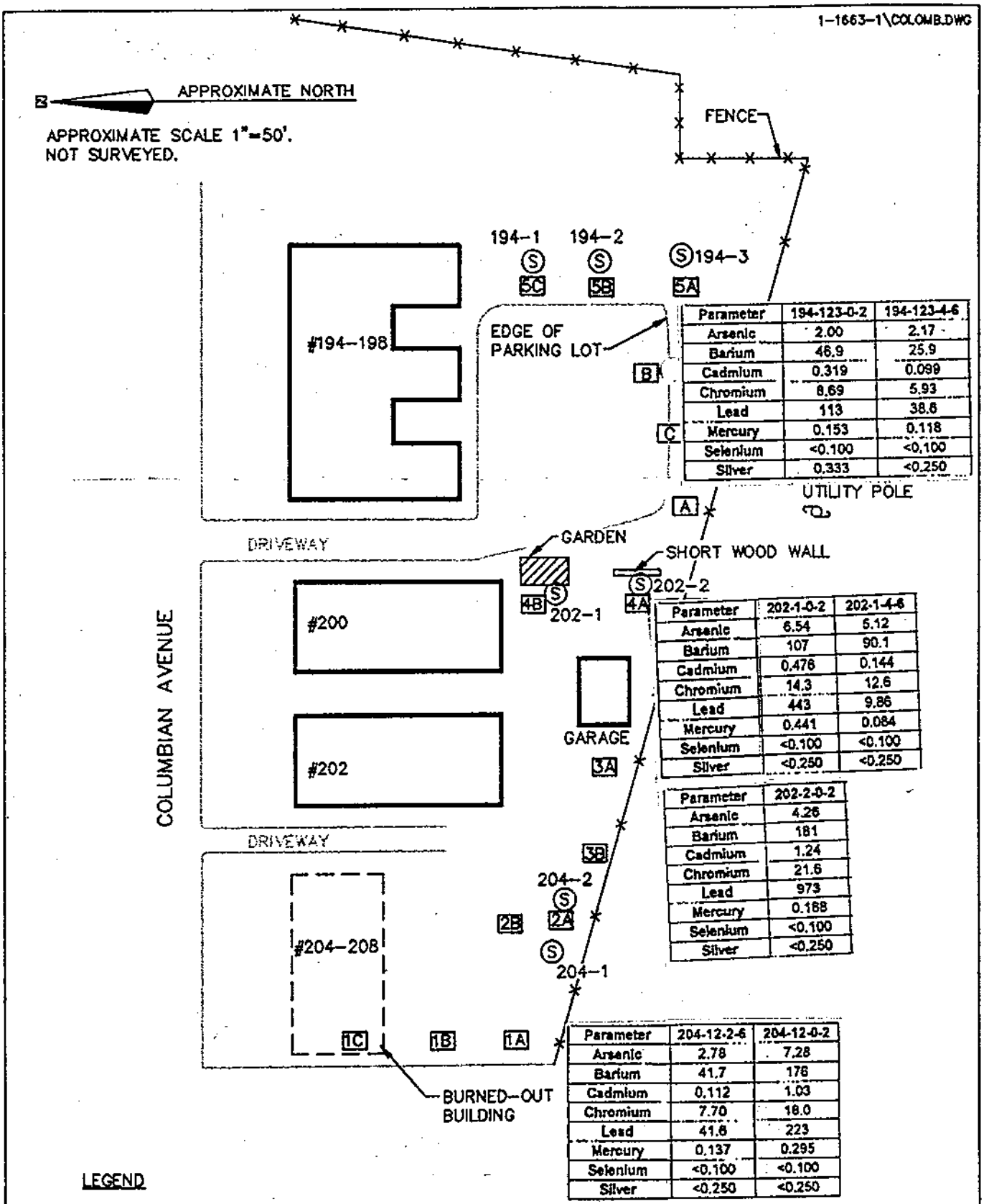
The site sketch of Figure 4 shows the locations of the October 1996 samples collected for laboratory analyses and lists the corresponding metal results obtained from the analyses. Results were received from GML on October 10. Of the metals tested (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) the highest concentrations were reported for lead (443 ppm from 0-2 feet bgs at 202-1; and 973 ppm from 0-2 feet bgs at 202-2). When compared to EPA Region III RBCs, with the exception of lead, none of the reported RCRA 8 metals were found above their respective RBC. The RBC listed for lead (as tetraethyl) is 0.008 ppm. The Commonwealth of Massachusetts sets 300 ppm as the soil standard for residential soils. Soil lead reported behind the 200 Apartment block exceeds both of these standards at both locations tested.

The soil metal data are summarized in Table 3.

Table 3
Summary of Detected Metals in Soils (1)
194-208 Columbian Avenue
Rutland VT
October 1, 1996
Concentrations in Parts per Million
(Micrograms/Gram)

LOCATION	INTERVAL (FT)	ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	MERCURY	SILVER
194-1	C 0-2	2.00	46.9	0.319	8.69	113	0.153	0.333
194-2	C 4-6	2.00	25.9	0.099	5.93	38.6	0.118	<0.25
194-3								
194-4	0-2	NA	NA	NA	NA	NA	NA	NA
194-5	0-2	NA	NA	NA	NA	NA	NA	NA
194-6	0-2	NA	NA	NA	NA	NA	NA	NA
202-1	0-2	6.54	107	0.476	14.3	443	0.441	<0.25
202-1	4-6	5.12	90.1	0.144	12.6	9.86	0.084	<0.25
202-2	0-2	4.26	181	1.24	21.6	973	0.188	<0.25
204-1	C 0-2	7.28	176	1.03	18.0	223	0.295	<0.25
204-2	C 2-6	2.78	41.7	0.112	7.70	41.6	0.137	<0.25
RBC(2)		23	5500	39	390	(3)	23	390

(1) Analytical data from Green Mtn Laboratory, Montpelier VT. Report #1368 Dated 10/1496.
(2) RBC = EPA Region III Risc-Based Concentration Guideline in Residential Soils (unless otherwise stated)
(3) RBC for lead (tetraethyl) is listed at 0.0078; Massachusetts Soil Std is 300 ppm
C = Composite Sample



Parameter	194-123-0-2	194-123-4-6
Arsenic	2.00	2.17
Barium	46.9	25.9
Cadmium	0.319	0.099
Chromium	8.69	5.93
Lead	113	38.6
Mercury	0.153	0.118
Selenium	<0.100	<0.100
Silver	0.333	<0.250

Parameter	202-1-0-2	202-1-4-6
Arsenic	6.54	5.12
Barium	107	90.1
Cadmium	0.476	0.144
Chromium	14.3	12.6
Lead	443	9.86
Mercury	0.441	0.084
Selenium	<0.100	<0.100
Silver	<0.250	<0.250

Parameter	202-2-0-2
Arsenic	4.26
Barium	181
Cadmium	1.24
Chromium	21.6
Lead	973
Mercury	0.188
Selenium	<0.100
Silver	<0.250

Parameter	204-12-2-6	204-12-0-2
Arsenic	2.78	7.28
Barium	41.7	176
Cadmium	0.112	1.03
Chromium	7.70	18.0
Lead	41.6	223
Mercury	0.137	0.295
Selenium	<0.100	<0.100
Silver	<0.250	<0.250

LEGEND

(S) JOHNSON COMPANY SOIL SAMPLE LOCATION

1A PREVIOUS CONSULTANT SOIL SAMPLE LOCATION

FIGURE 4
OCTOBER 1, 1996 SOIL METAL RESULTS
194-208 COLUMBIAN AVE.
RUTLAND, VERMONT

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We compared the October 1, 1996 concentrations to previously reported lead concentrations from similar areas. The July 1994 sampling by LBG reported lead at 334, and 486 ppm (LBG samples 4A, 4B). from the same areas that the 1996 data reported lead at 443, and 973 ppm respectively (JCO samples 202-1; 202-2). The highest lead reported by LBG from the 1994 sampling was 667 ppm from a composite sample at location 2A (Figure 2). A composite sample was collected during this investigation from the same area. Results reported lead concentrations from the composite sample (204-12-0-2) at 223 ppm.

In summary, results from the 1996 lead testing in soils confirmed the presence of lead in soils above both EPA Region III and Massachusetts standards. Compared to the 1994 sampling from similar locations, the 1996 results show higher lead concentrations in the soils behind the 200 Apartment, and lower lead in soils behind the 204-208 Apartments.

5.0 CONCLUSIONS

A total of 14 samples were collected for laboratory analyses from 10 separate locations behind (south of) the 194-208 Columbian Avenue Apartment block. This sampling was performed by The Johnson Company working with, and on behalf of Precision Industrial Maintenance on October 1, 1996. The samples were collected with the objectives of: confirming the level of contamination reported by LBG in a July 1994 investigation; and defining the vertical extent of the contamination by exploring the nature of the soils encountered below the previously sampled 1.7 foot depths.

The results of the October 1996 investigation help us conclude that :

PCB contamination is indicated behind the 194-198 Apartment block in levels that exceed EPA Region III Risk-Based concentration guidelines. The reported PCBs in soils occur to the east and southwest portions of this parcel. The October 1996 concentrations are less than the previous testing indicated, however, the detections are still higher than their respective RBC limit. Results from PCB analyses from deeper soils indicate the PCB contamination is limited to the upper two-foot soil depth, and as such, a limited excavation and off site disposal is recommended for the uppermost two foot layer of soil at this location.

The presence of lead, and arsenic in soils at 194-208 Columbian Avenue was also confirmed. When comparing the results from the October 1996 sampling to EPA Region III Risk Based concentrations, with the exception of lead, none of the detected metals were noted in excess of their respective soil guideline. Lead was reported at the highest concentrations behind the 200 apartment (in the vicinity of the garden). Samples collected from deeper intervals indicate that soil lead concentrations appear to decline with depth, and as such, a shallow soil removal plan is recommended at this location (#202-1, 202-2). With respect to arsenic concentrations, soil results from the October 1996 sampling suggest arsenic in soil at lesser concentrations than the July 1994 data reported.

PAHs were not tested during the October 1996 sampling, so a comparison is not possible between the detected levels of July 1994 and this most recent testing. A field decision was made during the October 1996 sampling, that given the costs of the PAH analyses, it would be just as cost effective to perform the soils remediation (e.g. excavation of the uppermost two feet of soil). As such, no PAH testing was performed as part of this investigation.

6.0 RECOMMENDED CORRECTIVE ACTION

The results of the October 1, 1996 investigation have reported PCBs and lead in the uppermost two feet of soils at concentrations that exceed EPA Region III Risk Based Concentrations for these compounds respectively. Given the residential setting that this Site occupies, corrective action is recommended in order to reduce the risk of contact with these soils. Laboratory results from samples collected at depths below two feet during the October 1 investigation reported that no PCBs were detected above the limit of analyses, and that metals, where detected, were reported at concentrations that were either consistent with, or lower than, the overlying soil concentrations.

There are many and varied methods for disposing of this soil. Technologies range from stockpiling and treating on site; to off-site disposal via incineration. Given the small area available, on-site stockpiling does not appear feasible. Another on-site treatment method is capping and/or stabilization of the soils. Again, lot-size limitations and the nature of the topography warrant that this technology is not practical.

Of the range of technologies available for the anticipated volume of soils, the most appropriate appears to be trucking to the nearest lined landfill that will accept this soil. As such, we are recommending a limited soils excavation and off site disposal for the uppermost two-foot of soils from localized areas behind 194-208 Columbian Avenue. These areas are delineated on the site sketch in Figure 5. The results of the October 1 sampling indicate that reported soil metals, and PCB concentrations diminish with depth, therefore, by scraping the uppermost two-foot interval, this provides adequate source removal from this area.

A series of cross sections have been generated (Figures 6,7, 8) that approximately delineate the underlying soils, and show the sampled intervals upon which analytical results are available. Based upon the sampling performed, we see no reason to excavate any deeper than two feet.

The actual volume removed will depend upon the extent of the soil staining observed during the excavation process and, with respect to PCB contaminated soils behind 194-198, results of immunoassay testing to ensure that the horizontal extent of the PCB-contaminated soils has been removed.

Upon contacting the Rutland Solid Waste District, we have learned that preliminarily, the nearest lined landfill that may accept this soil is North Country Environmental Services located in Bethlehem, NH, a distance of approximately 100 miles. This facility requires a review of available analytical data in order to gain approval from the New Hampshire Department of Environmental Services regarding acceptance of the soils. In the event there are closer facilities, we would pursue arrangements with the closest facility to this site. The DEC will be notified of the confirmation of which facility is selected, prior to final disposal. The analytical results from this investigation, along with previous analytical data would need to be submitted to the facility prior to undertaking the removal. In the event additional sampling is required for disposal at this facility, this will be done prior to the excavation, so that excavation can take place and the soils loaded directly for transport to the facility on the same day.

Clean backfill will be brought in so that the excavated area will be restored to its original grade, smoothed, re-seeded or otherwise restored to its original condition and use.

A letter report will be generated for submittal to the SMS that documents the soil excavation off site disposal.

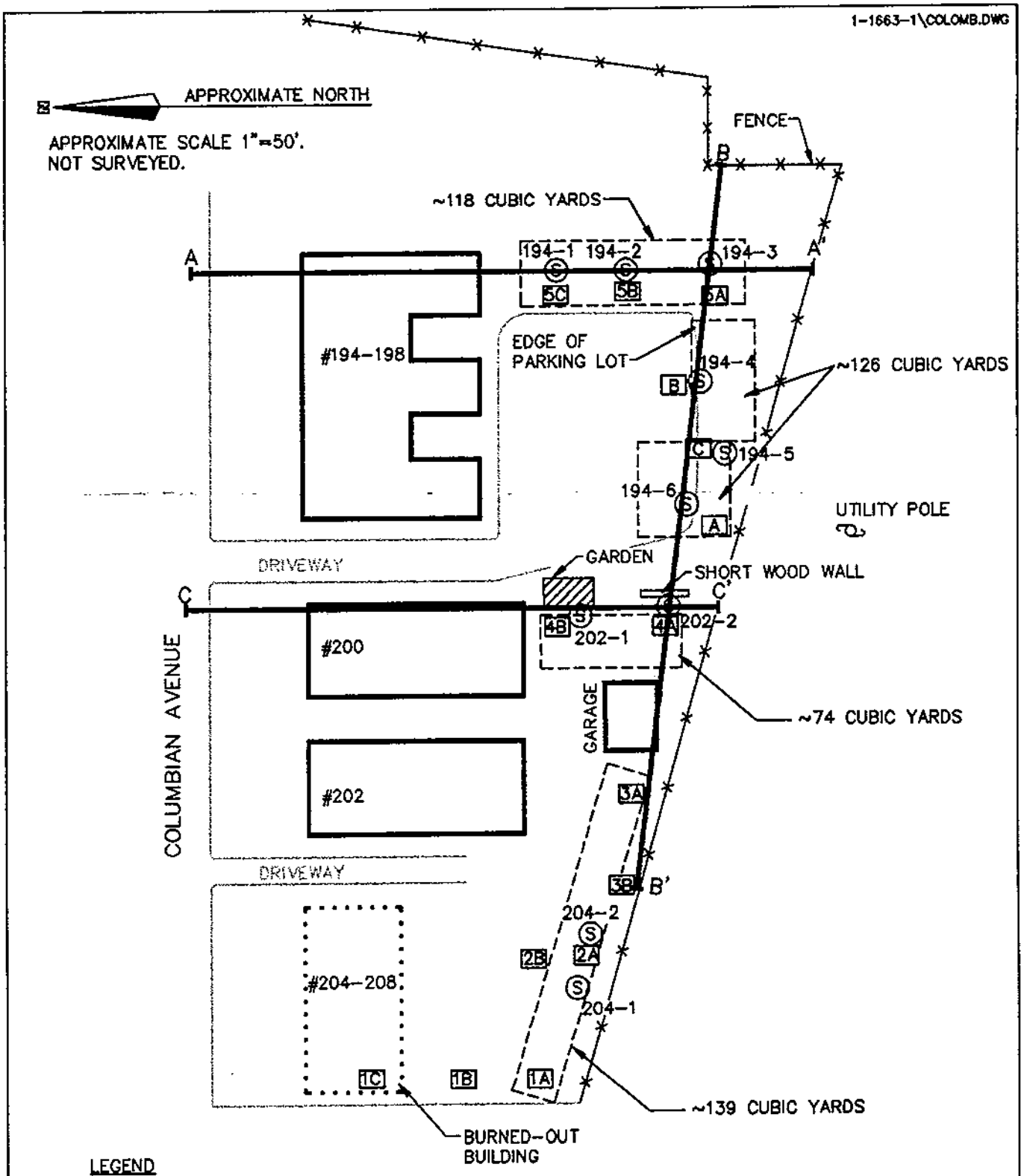
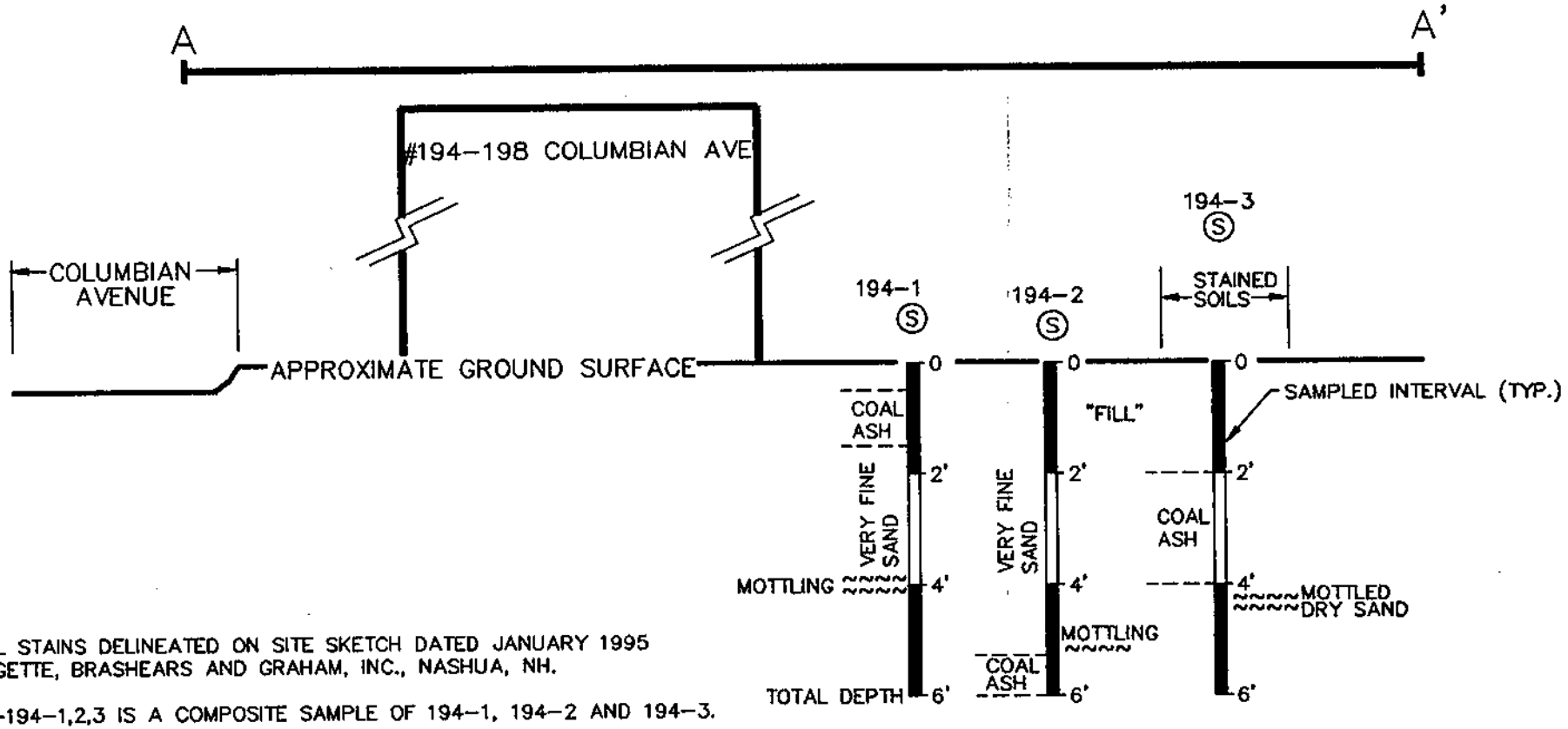


FIGURE 5 – PROPOSED REMEDIATION PLAN
194–208 COLUMBIAN AVE.
RUTLAND, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602



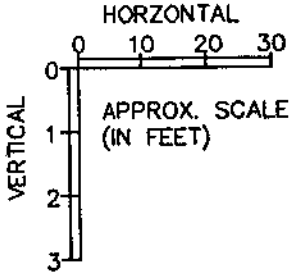
NOTES

1) SOIL STAINS DELINEATED ON SITE SKETCH DATED JANUARY 1995 BY LEGETTE, BRASHEARS AND GRAHAM, INC., NASHUA, NH.

2) "C–194–1,2,3 IS A COMPOSITE SAMPLE OF 194–1, 194–2 AND 194–3.

3) LOCATIONS ARE APPROXIMATE, NOT SURVEYED.

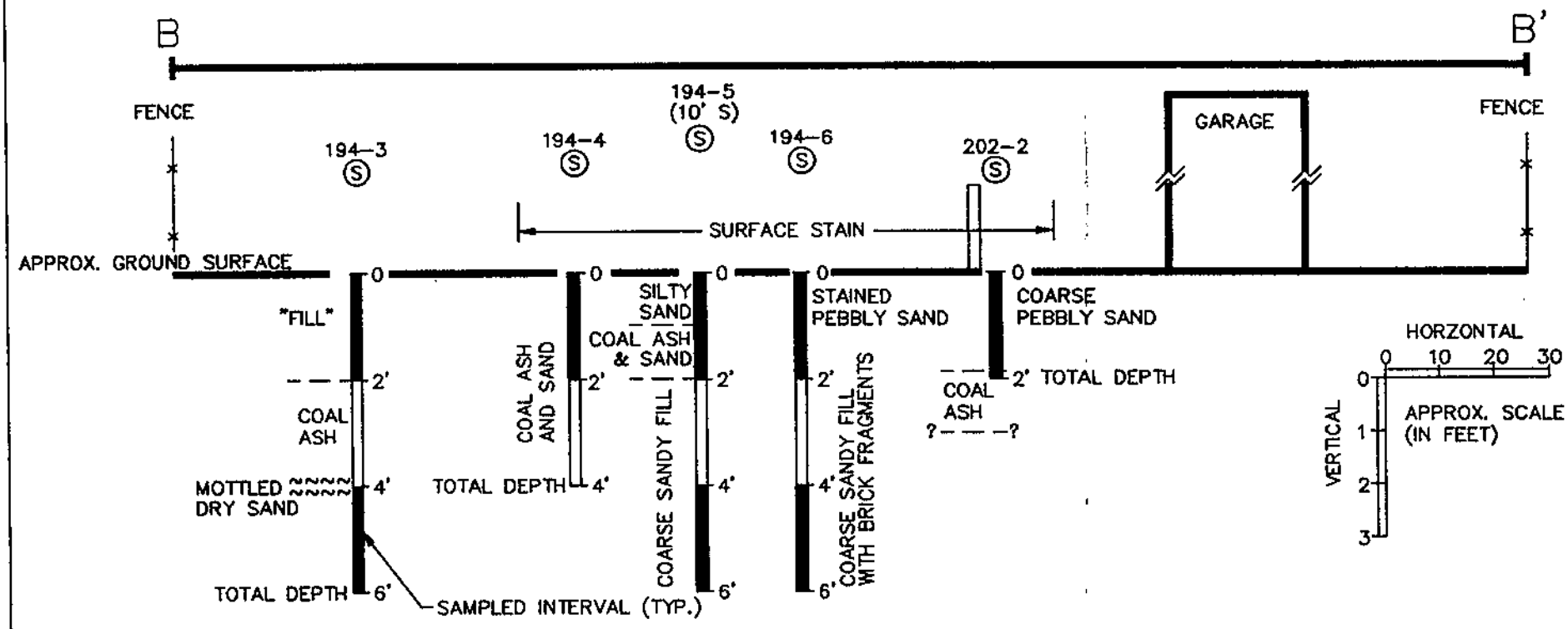
SAMPLE	INTERVAL	AROCLOR 1248	AROCLOR 1254	LEAD	ARSENIC
C–194 1,2,3	0–2'	<0.20 PPM	0.18 PPM	113 PPM	2 PPM
	4–6'	<0.08 PPM	<0.08 PPM	38.6 PPM	2.17 PPM



XSEC-AA

FIGURE 6 – CROSS SECTION A–A'
194–208 COLUMBIAN AVE.
RUTLAND, VERMONT

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602



SAMPLE	INTERVAL	AROCLOR 1248	AROCLOR 1254
C-194-1,2,3	0-2'	<0.20 PPM	0.18 PPM
194-4	0-2'	<0.08 PPM	<0.08 PPM
194-5	0-2'	<0.08 PPM	<0.08 PPM
194-5	4-6'	<0.08 PPM	<0.08 PPM
194-6	0-2'	<0.08 PPM	<0.08 PPM

SAMPLE	INTERVAL	LEAD	ARSENIC
202-2	0-2'	973 PPM	4.26 PPM

NOTES

1) SOIL STAINS DELINEATED ON SITE SKETCH DATED JANUARY 1995 BY LEGETTE, BRASHEARS AND GRAHAM, INC., NASHUA, NH.

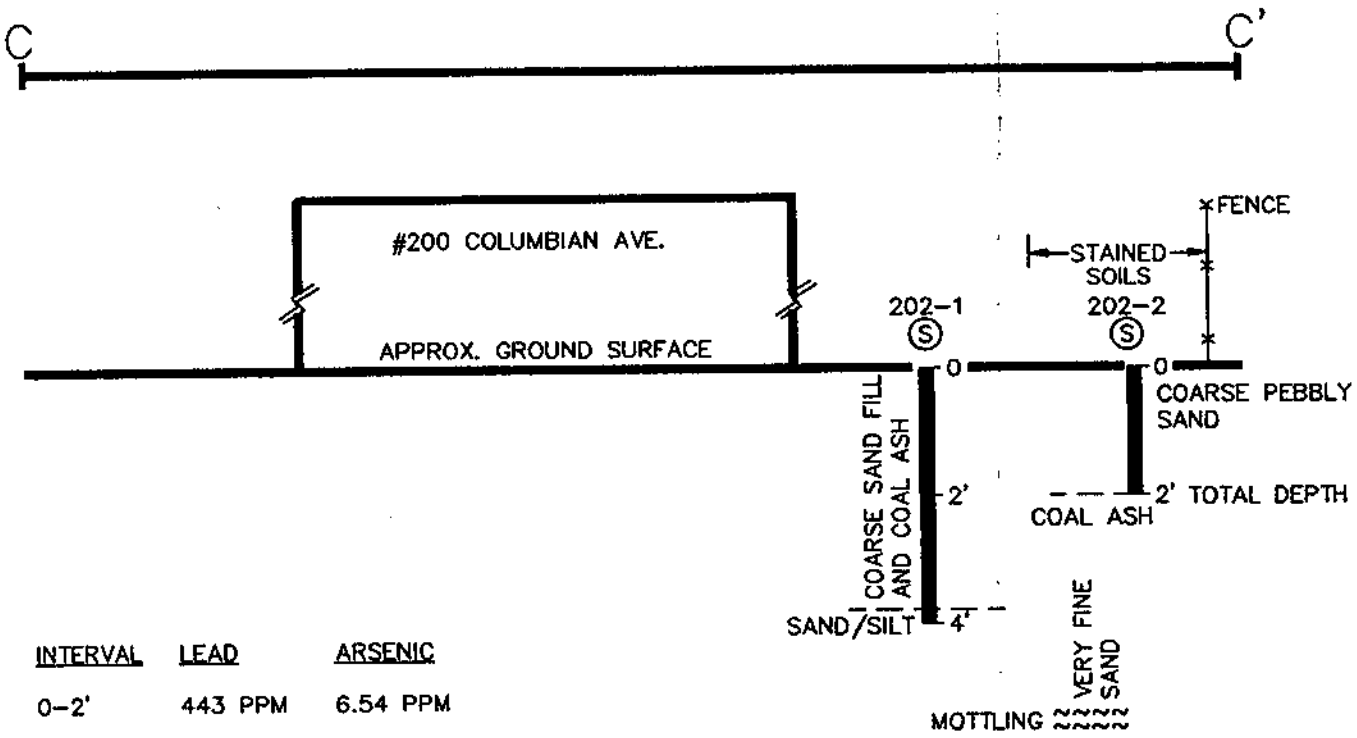
2) "C-194-1,2,3 IS A COMPOSITE SAMPLE OF 194-1, 194-2 AND 194-3.

3) LOCATIONS ARE APPROXIMATE, NOT SURVEYED.

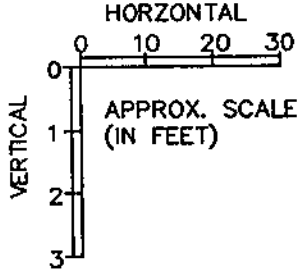
FIGURE 7 - CROSS SECTION B-B'
194-208 COLUMBIAN AVE.
RUTLAND, VERMONT

1-1663-1\XSEC-BB

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602



SAMPLE	INTERVAL	LEAD	ARSENIC
202-1	0-2'	443 PPM	6.54 PPM
	2-4	9.86 PPM	5.12 PPM
202-2	0-2'	973 PPM	4.26 PPM



NOTES

1) SOIL STAINS DELINEATED ON SITE SKETCH DATED JANUARY 1995 BY LEGETTE, BRASHEARS AND GRAHAM, INC., NASHUA, NH.

2) LOCATIONS ARE APPROXIMATE, NOT SURVEYED.

FIGURE 8 – CROSS SECTION C-C'
194-208 COLUMBIAN AVE.
RUTLAND, VERMONT

1-1663-1\XSEC-CC

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering
100 STATE STREET MONTPELIER, VT 05602

Attachment 1

October 14, 1996
Analytical Data

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602
Phone: (802) 223-1468 Fax: (802) 223-8688

LABORATORY RESULTS

Client Name:	The Johnson Company	**GML Ref. #**	1368
Client Address:	5 State Street	**Project #:**	1-1663-1
	Montpelier, VT 05602	**Sample Date:**	10/1/96
Location:	PIM-Columbian Ave.	**Date Extracted:**	10/4-10/9/96
Sampler:	Paul Daley	**Date Analyzed:**	10/7-10/14/96
Attention:	Jim Bowes	**Report Date:**	10/14/96

Polychlorinated Biphenyls (PCBs) by EPA Method 8270 (GC/MS)
Results - mg/kg - ppm (Dry Weight)

Parameter	194-123-0-2	194-123-4-6	194-4-4-6	194-5-0-2	194-6-0-2	194-4-0-2	194-5-4-6
Aroclor 1016	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Aroclor 1221	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Aroclor 1232	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Aroclor 1242	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Aroclor 1248	<0.200	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Aroclor 1254	0.180	<0.080	<0.080	<0.080	0.100	<0.080	<0.080
Aroclor 1260	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080

Total RCRA Metals Results (mg/kg - ppm (wet weight))

Parameter	194-123-0-2	194-123-4-6	202-1-0-2	202-1-4-6	202-2-0-2	204-12-2-6	204-12-0-2
Arsenic	2.00	2.17	6.54	5.12	4.26	2.78	7.28
Barium	46.9	25.9	107	90.1	181	41.7	176
Cadmium	0.319	0.099	0.476	0.144	1.24	0.112	1.03
Chromium	8.69	5.93	14.3	12.6	21.6	7.70	18.0
Lead	113	38.6	443	9.86	973	41.6	223
Mercury	0.153	0.118	0.441	0.084	0.188	0.137	0.295
Selenium	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Silver	0.333	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250

Reviewed By,

Allen R. Sewall

Director of Chemistry

CHAIN OF CUSTODY RECORD

№ 3169

Client/Project Name	Project Location
P.I.M.	COLUMBIA AVE
Project No.	**Field Logbook No.**
1-1665-1	PTD-069
Sampler: (Signature)	**Chain of Custody Tape No.**
Paul T. Dudley	

ANALYSES: PCB's; RCRA 8; 13608

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	PCB's	RCRA 8					REMARKS
194-123-C-2	10/1/96	1400		SOIL	X	X					COMPOSITE
194-123-4-6		1400			X	X					COMPOSITE
194-4-4-6		1240			X						
194-5-0-2		1328			X						
194-6-0-2		1354			X						
194-4-0-2		1209			X						
194-5-4-6		1343			X						
202-1-0-2		1428				X					

	Date	Time		Date	Time
Relinquished by: (Signature) Paul T Dudley	10/1/96	1950	Received by: (Signature) JCO LOCKED LAB/FRIDGE		
Relinquished by: (Signature) Owen R Bowen (JCO LAB)	10/2/96	8:52	Received by: (Signature) Allen L. Kendall	10/2/96	0855
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method: —	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

5 State Street
Montpelier, VT 05602
(802) 229-4600
Fax (802) 229-5876
THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering

ANALYTICAL LABORATORY: GREEN MT LABS

1974 3-84

YELLOW - Lab copy PINK - Transporter copy ORANGE - [illegible] copy

CHAIN OF CUSTODY RECORD

N. [illegible]08

Client/Project Name	Project Location
PIM	COLUMBIA AVE
Project No.	**Field Logbook No.**
1-1663-1	PTD-009
Sampler: (Signature)	**Chain of Custody Tape No.**
Paul T. Dey	13608

ANALYSES: TCLP's; METALS-RCRA

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
202-1-4-6	10/1/96	1445		SOIL		X					
202-2-0-2	"	1506		"		X					
204-12-2-6	"	1549		"		X					COMPOSITE
204-12-0-2	"	1549		"		X					COMPOSITE

Relinquished by: (Signature) Paul T. Dey	Date 10/1/96	Time 1950	Received by: (Signature) JCO LOCKED LAB/FRIDGE	Date	Time
Relinquished by: (Signature) James R Bower (JCO LAB)	Date 10/2/96	Time 8:52	Received by: (Signature) Arthur R. Tuttle	Date 10/2/96	Time 0855
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

5 State Street
Montpelier, VT 05602
(802) 229-4600
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THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering

ANALYTICAL LABORATORY

GREEN MT LABS

1974-3-84

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy ORANGE - Sampler copy